

CLAIMS

1. A hydrodynamic bearing, comprising:

a column-like shaft ~~(2)~~;

5 a hollow cylindrical sleeve ~~(3)~~ being fitted on an outer circumferential surface of said shaft ~~(2)~~ so as to achieve relative rotation among the two; and

a thrust plate ~~(5)~~ being directly or indirectly attached to or integrated with either one of said shaft ~~(2)~~ and said sleeve ~~(3)~~, which thrust plate ~~(5)~~ being faced with a plane formed at one end of the other one of said shaft ~~(2)~~ and said sleeve ~~(3)~~ perpendicular to an axis of the said bearing,

15 wherein hydrodynamic pressure in a radial direction is generated at a radial bearing portion formed by an outer circumferential surface of said shaft ~~(2)~~ and an inner circumferential surface of said sleeve ~~(3)~~, and hydrodynamic pressure in a thrust direction is generated at a thrust bearing portion formed by said thrust plate ~~(5)~~ and said plane which is faced with said thrust plate ~~(5)~~ and formed at said one end of said other member perpendicular to said axis,

25 the hydrodynamic bearing is characterized in that either one of the surfaces forming said radial bearing portion is provided with a groove or grooves ~~(7)~~ which

generate a force in a thrust direction so as to make the two facing members at said thrust bearing portion closer to each other, and

either one of the surfaces of said two facing members at said thrust bearing portion is provided with a groove or grooves ~~(6)~~ which generate hydrodynamic pressure in said thrust direction.

2. The hydrodynamic bearing of claim 1, wherein said groove ~~(7)~~ formed in said radial bearing portion is either a groove inclined with respect to said axis, or a herringbone-shaped groove.

3. The hydrodynamic bearing of claim 1 ~~or 2~~, wherein an upstream side of said radial bearing portion is shielded against outside atmosphere, and

a resultant negative pressure developed in the vicinity of said upstream side of said radial bearing portion is utilized for enhancing said force in a thrust direction of bringing the two facing members forming said thrust bearing portion closer to each other.

4. The hydrodynamic bearing of claim 1 ~~or 2~~, wherein the radial bearing portion connected with outside atmosphere and the thrust bearing portion connected with

a outside atmosphere are formed contiguous to each other, and
 utilize gas introduced at said radial bearing portion for a
 thrust pressure at said thrust bearing portion, whereby
 said groove(s) ~~(6)~~ for generating the hydrodynamic pressure
 5 at said thrust bearing portion is eliminated.

a 5. The hydrodynamic bearing of ^{claim 1} ~~any one of claims 1~~
~~through 4~~, wherein the hydrodynamic bearing is structured
 as a shaft-rotation type.

10

a 6. A spindle motor comprising the hydrodynamic
 bearing of ^{claim 1} ~~claims 1 through 5~~.

09720671-022004